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DETERMINANTS OF INTER-BIRTH INTERVAL AMONG MARRIED MULTIPAROUS MOTHERIN CHINAKSEN DISTRICT, EASTERN ETHIOPIA: COMMUNITY BASED CASE-CONTROL STUDY

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Determinants of Inter-Birth Interval Among Married Multiparous Mothers in Chinaksen District, Eastern Ethiopia: A Community based Case-Control Study

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Research Thesis submitted to School of Public Health, College of Health and Medicine Science, Haramaya University for the Partial fulfillment of the Requirements of the Degree of Master of Public Health in Epidemiology

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BIOGRAPHICAL SKETCH

I was born in September 01,1986 in Chelenko, EastHarargezone, OromiaRegionalState, Ethiopia. I completed my elementary and high school in chelenko elementary school and chelenko high school respectively.I attended my preparatory school at Haramaya preparatory school. After completion of preparatory I joined Jimma University in in 2006.At Jimma University I studied public Health officer and got my BSc degree in public Health officer in July 2010. After graduation I was employed in Oromia region 01september, 2010 and served until I joined Haramaya University post Graduate program directorate in 2017 to pursue study leading to Master of Science degree in Public Health.

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ABBREVIATIONS AND ACRONMYS

ANC Antenatal Care

AOR Adjusted odd ratio

CHMS College of Health and Medical Science

CPR Contraceptive prevalence rate

CSA Central Statistical Agency

EBF Exclusive Breast Feeding

IHRERC Institutional Health Research and Ethics Review Committee

IUCD Intra uterine contraceptive device

MOH Minster of Health

PHCU Primary Health Care Unit

PI Principal Investigator

SPSS Statistical Package for Social Science

TFR Total fertility rate

USA United States of America

USAID United State of Agency for International development

WHO World Health Organization

SUMMARY

Background: Birth interval is time gaps between two consecutive life births. The optimal inter birth interval until the next birthis at least 33months. It is the resting period that allows the mother to have adequate time to recover from pregnancy. Recent research found that the health of mothers and infants with the birth interval of 3 to 5 years safer than that of less than three years. However, there is a paucity of information and scarce of studies addressing determinants of in birth intervals in Eastern Ethiopia.

Objective: To identify determinants of inter-birth interval among married multiparous mothers in Chinaksen woreda, Eastern Ethiopia from 15th April to 15th June 2019.

Methods: Community based unmatched Case-Control study was conducted from15th April to 15th June 2019.Case were mothers with two subsequent birth interval of less than three years and controls were mothers with two subsequent birth intervals between three and above years. Simple random sampling technique was employed to select 438 (210 cases and 210 controls) study subjects. Pretested-structured questionnaire was used to collect data from participants through face-to-face-interview. Data were entered into EpiData version 3.1 and analyzed by SPSS version 24. Descriptive statistics were used to describe characteristics of participants. Multivariable logistic regression analyses were used to identify determinants of inter-birth interval. P value <0.05 was used to report significance.

Results: In this study; youth age groups (15-24 years)(AOR= 7.12, 95% CI:(2.99,16.93), poorest wealth index (AOR:2.55, 95% CI (1.17–5.56),Mothers whose their husbands decide about their contraceptive use (AOR=5.03, 95% CI:(1.70,14.89), didn't use contraceptives betweem two birth (AOR=7.81, 95% CI: (4.57, 13.33)), home delivery of index child(AOR= 2.03, 95% CI: (1.21-3.42)) and female index child(AOR=2.43, 95% CI: (1.49, 3.97))were significant associated with inter-birth interval.

Conclusions: In this study, being in the age of youth(15-24)years , poorest wealth index, husband's decision maker on birth interval ,did't use contraceptive between two birth , home delivery of index child and female sex of index child were significant determinants of short inter birth interval.

Keywords: Birth interval, Optimal birth interval, Determinants, Chinaksen woreda.

1. INTRODUCTION

1.1. Background

The world has experienced fertility declines over the recent decades. However, the fertility decrement; the world's populations have beengrowing rapidly. Africa, particularly in sub-Saharan Africa remained the region with the highest fertility (4.7 and 5.1 births per women in 2010-2015 respectively).By mid-century, four fifths (80%) of the world's population would live in Africa or Asia (UN, 2017, Canning et al., 2015, USAID, 2010).

Even though, the total fertility rate (TFR) is showing decline from4.8 births to 4.6 births per women(CSA, 2016) ,Ethiopia is the second most densely inhabited country on the African continent and has over 105 millioninhabitants. The fertility rate determined by many factors such as; contraceptive use, breast feeding and Post partum amenorrhea, that affect fertility, by extending length of between birth intervals.(Towriss and Timæus, 2018).

Birth interval is the time period between the current live bith and the preceding livebirth .Assuming nine month gestation, which corresponding to a birth to birth interval of 33months that nine month longer than a birth-to-pregnancyinterval(Marston, 2007, Post, 2010, Starbird and Crawford, 2019).Very long gaps betweem births may result in maternal physiological regression i.e.,risk for morthers(and infants) related to those associated witrh primiparous women(Wendt et al., 2012).This may be explan why intervals greater than 60months were associated with increased risk for eclampsia,pre-eclapsia,labor dystocia and autism spectrum disorders(Conde-Agudelo et al., 2007, Cheslack-Postava et al., 2014).

Short intervals between births have negative effects on maternal, infant, and child health that would be at a significantly higher risk of dying(Canning et al., 2015).Moreover,emerging evidence suggests that shorter inter pregnancy interval(less than six to less than 12months) are associated with higher risk of neurodevelopmental disorders including autism(Cheslack-Postava et al., 2014, Gunnes et al., 2013) and schizophrenia(Gunawardana et al., 2011).

The recommended optimal birth interval is not agreed up on by different researchers.Some experts recommend that a minimum bith to pregnancy interval should be 18 months while others recommend 24months.While the world health Organization(WHO) and other international organizations recommended waiting at least 24 to 33months years between pregnancies to reduce infant and child mortality and also to benefit maternal health, where as recent studies supported by United State Agency for International development(USAID) have suggested that optimal birth interval ,3-5 years, might be more advantageous (Marston, 2007, WHO, 2015).

Besides the health implication, closely spaced birth intervals accelerate the population growth and challenge the development efforts of a country. It makes difficult for women by limiting contribution to economic development, to be productive members of society(Tsegaye et al., 2017).Therefore,family planning is one the best interventions to reduce maternal and child morbidity and mortality. By increasing Contraceptive prevalence rate that would contribute to slower population growth and lower dependacy ratios by extending the interval between two births(Asefa and Birhanu, 2014, CSA, 2016).

1.2. Statement of Problem

Globally, despite progress over the past two decades, in 2017, alone an estimated 5.4million deaths occurred in the first five years of life and new born for 2.5million of these deaths accounting for 46 percent of them in the first month of life (UN, 2018).In Ethiopia ,about 53.4% of all under five mortality rates were contributed by neonatal and infant deaths(CSA, 2016).

Majority of causes of neonatal deaths are related to pregnancy and they are preventable. The world bank's reproductive health action plan 2010-2015 estimates suggest that if lengths of all inter-birth intervals were increased to at least 24 months and 33months , the lives of 0.9 million and 1.8 million children under the age of five could be saved respectively(World Bank, 2010). Promoting the length of birth interval to at least two years was associated with the reduction of under one mortality by 50 % (Abel, 2014).

The study done at Fayoum,Egypt revealed that intervals between pregnancies;both short(less than 18months) and long(60 months and more) have been associated with increased risk of several adverse perinatal and maternal outcomes such as preterm bith,LBW,small for gestational age, and perinatal death(Mahfouz et al., 2018).

Another study done in rural Bangladesh on determinants and consequence of short birth interval revealed that compared to birth intervals of 45 months or longer ,birth intervals of less than 21 months were associated with a greater than two fold increased risk of adverse pregnancy out come by 2.33 times ,as well as increased risk of prenatal mortality by 2.33 times ,still birth by 2.13 times, neonatal mortality by 2.28 times(de.Jonge et al., 2014).

Facility based unmatched case control study design was used in sample of 453 mothers (88 cases and 365 controls) who gave birth two or more times in Gondar and Bahirder teaching referral Hospital, Ethiopia showed that median of inter-pregnancy interval for cases and controls were 30 and 38 months respectively. It showed that women who had inter-pregnancy interval less than 24 months were about 2.7times more likely in delivering low birth weight infant compared to the interval of 24 and above (Yesuf et al., 2016).

In Ethiopia like many other sub-Saharan African countries, fertility, maternal mortality, and child mortality rate are stillhigh. The 2016 EDHS results show that, in Ethiopia 1 in every 35 children dies within the first month, 1 in every 21 children dies before celebrating the first birthday, and 1 of every 15 children dies before reaching the fifth birthday(CSA, 2016). In Particular, Children born after an interval of four or more years are 58 percent less likely to die before their first birth day compared to the first birth(Negera et al., 2013)

Demographic and health survey of Ethiopia showed that 50% of births occurred within 3years which is below the recommendation (CSA, 2016). Study conducted in south west Ethiopia showed 51,2% births occurred within shorter birth interval(Tsegaye et al., 2017).A cross sectional study in southern Ethiopia shows 57% of births occurred within low birth interval where the median birth interval was 33months(Yohannes et al., 2011).

Study conducted in Enugu, Nigeria indicated that not use any contraception methods found to be having strong association where women who did not use contraception 57times more likely to have short birth interval(Dim et al., 2013). Study done in Northern Ethiopia indicates, women who beast feed for 7-12months were 6 times less likely to have subsequent birth than less than 6 months breast feeding(Tessema et al., 2013). Study conducted in Arbaminch, Etiopia indicated that those women who had female preceding child have more tend to have short birth interval than women who had male child(Hailu and Gulte, 2016a).

Short birth interval less than 36 months has an effect on maternal and infant mortality and morbidity. Evidences show that birth interval is associated with increased risk of maternal and child health where by short birth interval increases the risk of maternal mortality and morbidity, pretermbirth, low birth weight, small for gestational age ,third trimester bleeding ,anemia and puerperal sepsis (WHO, 2015).

Short birth interval is known to cause maternal and child mortality in Ethiopia, However, there are few researches conducted concerning the determinants of birth interval in Ethiopia and particularly in the study area. Hence knowing these determinants, is important for control of fertility and reduction of maternal and child mortality. Therefore, this study aimed to assessing the determinants of birth interval among married multiparous mothers who gave birth in the five years proceeding to this survey in Chinaksen Woreda, Eastern, Ethiopia.

1.3. Significance of the study

In Ethiopia many study have been done on the outcomes and prevalence of birth interval rather than identifying the determinantsthat where appropriate intervention is possibly taken to tackle the problem.However, there is high proportion of short birth interval about half (51.2%) and evidence show that Ethiopia is facing high fertility, maternal and infant mortality. Having research based knowledge and understandingsabout determinants associated with short birth interval might alert people who are responsible in that particulararea to take initiative to apply appropriate interventions.

The finding of this study would help government of Chinaksen woreda administration and other local health institution to understand the situation of birth interval in the study area, so that they can take appropriate measures based on the existing problem, to increase the practice of birth spacing, for reduction of fertility, maternal and infant mortality.

It would also help local health care providers, and especially health extension workers (HEW) to design actions that can be suitable to their clients at a community and facility level.This study would also help for the requirement partial fulfillment of master's degree.

1.4. Objectives

To identify determinants of inter-birth intervals among married multiparous mothers in Chinaksen woreda, Eastern Ethiopia between 15th March to 15th May, 2019.

1.5. Hypothesis Testing

Null Hypothesis :Determinants of inter-birth intervals are the same among cases and controls.

2.LITERATURE REVIEW

2.1. Birth interval

The optimal birth interval recommended by WHO and other international organizations is 3-5years between two successivebirths. Optimal birth interval is important to reduce adverse pregnancy outcomes and reduce maternal and infant mortality. Besides the health benefit optimal birth interval is also helpful for reduction of fertility. However, differentstudies show that the practice of short birth spacing is high especially in developing countries.

According to the longitudinal study from total of 15,373 afterbirth intervals were recorded from 8980 women aged 15-49 years done in Rufiji, Tanzania, From 1st January 1999 to 31st December 2010, the median inter-birth interval was 33.4 months (inter-quartile range = 16.5).Of these 48.4% were below the WHO recommended minimum inter-birth interval of 33months between two consecutive live births for better maternal and child health outcomes. (Exavery et al., 2012a).

A community base cross sectional study done (n=826) in Oromia , southwest Ethiopia in 2016 on the practice of child spacing and associated factors among women of child bearing age revealed that more than half (51.2%) of the study subjects had short birth interval.More than one-third (34.9%) respondents had optimum birth interval and the remaining had long birth interval(Tsegaye et al., 2017).

A population based study (n=66,759) done on effects of interpregnancy interval and outcome of the preceding pregnancy on pregnancy outcomes in Matlab, Bangladesh showed that the median time of preceding inter birth interval was 42 months which was greater than the WHO recommended minimum inter-birth interval of 33 months. Nevertheless, about one-quarter of the birth intervals were <24 months(DaVanzo. et al., 2007).

The case-control study(n=218) in Mbarara Hospital in south western Uganda on factors associated with short birth-interval among delivered women showed that, the most frequent

birth interval was 36months (Ronald et al., 2016).Similar study of facility base a cross sectional survey(n=786) of all women attend at Al Hada armed forced hospital conducted on inter birth spacing between 1 st February 2005 and 31 st January 2006 showed that, the mean duration of inter birth interval was 2.38+/-1.24 years(Abdel-Fattah M et al., 2007).

Thefacility study(n=500) conducted on determinants ,the patterns and association factor of birth intervals among multiparous women in Babol, northern ,Iran in 2007 was identified that ,the mean(+/-SD) birth interval was 61+/_25.7months(Hajian-Tilaki et al., 2009).Another study has revealed that birth intervals in Ethiopia, Kenya, Tanzania, and Zimbabwe are long (between 35 and 51 months) and have been lengthening continuously since the 1970s or earlier(Towriss and Timæus, 2018).

A community based one to one case-control study(n=652) was conducted in rural pastoral communities of southern Ethiopia on determinants of inter birth interval among married women in 2012 ,showed that, the median of birth interval was 31 and 40 months among cases and controls respectively(Begna et al., 2013).Facility base one to two case-control study(n=330) done mekelle city, northern Ethiopia in 2017 on determinants of birth interval on among child bearing age women showed that the mean age of respondents was 31.45 with SD+/-5.03 years(Amare et al., 2018).The EDHS 2016 showed that the median births interval in Ethiopia is 34.5 months(CSA, 2016).

A community base one to two case-control study(n=636) that conducted in Arba Minch ,gammo gofa,Ethiopia on determinant of short inter birth interval among reproductive age mothers from february to april 2014 indicated that, having no formal education (AOR = 2.36, 95% CI [1.23–4.52] of respondents were independent predictors of short birth interval. Whereas duration of breast feeding for less than 24 months [AOR=66.03, 95% CI (34.60-126)]. Being female of index child was 5.73 times gave short birth interval [AOR=5.73, 95% CI :(3.18-10.31)]. Women who were use modern contraceptive 2.79 times less likely to gave short birth interval [AOR=2.79,95% CI(1.58-4.94)] and poor wealth index were 4.89 times more likely to practice short birth interval [AOR=4.89,95% CI;(1.81-13.25)] (Hailu and Gulte, 2016b).

2.2. Determinants of inter-birth interval

2.2.1. Sociodemographic and Socioeconomic characteristics

Empirical evidence from different studies have showed that the role of Socio-demographic,socio-economic ,reproductive and healthcare were significant in influencing inter birth intervals among married multiparous women(Begna et al., 2013, Hailu and Gulte, 2016b, Tsegaye et al., 2017, Exavery et al., 2012b). According to these evidences, good examples which have been repetitively examined as determinants of length of birth interval like age of mother, Occupational status of mother ,educational status of mother, place of residence, wealth index, husband's educational status, husband's occupational status ,sex of index child, parity ,duration of breast feeding and use of contraception between last births have been repetitively identified as determinants of birth interval were used.

A community based cross sectional study (n=660) that conducted in ethiopia on duration of birth interval and association factors among married women of childbearing age showed that being in the age of 19-24 about 5.4 times have more likely to have short birth interval compared to those age >35years old (AOR=5.4,95% CI:(1.54-8.97)(Seifadin and Tesfaye, 2019).

According to the study done in Mozambique ,on correlates of inter-birth interval; Implication of optimal birth spacing strategies in Mozambique shows that younger women were more likely to have an interval less than three years than those older;nationally, three-quarters of 15-19 women were likely to have short preceding interval while lower proportion of older women have such short interval(Saumya R et al., 2006)

Maternal age would affect birth spacing. In many developing countries, younger women are more likely than older women to have their next child in less than three years.(USAID, 2005)According to facility base one to three case-control study(n=218) in Mbarara Hospital in south western Uganda on factors associated with short birth-interval among delivered women showed that, the age of women below 30 years was statistically significant associated with short birth intervals(AOR=2.3),95% CI [1.17-4.67](Ronald et al., 2016).Evidence from developing countries from EDHS also showed that the length of the preceding birth interval is increased as maternal age increased (Rutstein, 2008).

The study done in Rufiji Health and demographic surveillance system (HDSS) on levels of birth spacing and factors affecting non-adherence to the WHO recommended minimum inter-birth interval length among women aged 15-45 in, Tanzania, from 1999 to December 2010 were showed that the maternal age was inversely related with non-adherence to the recommended minimum interval between two consecutive live birth. The proportion of the inter birth intervals that were non-adherence was highest(76%) among youngest(15-19) women and decline rapidly in subsequent age categories to as low as 30% among the oldest(45-49)(Exavery et al., 2012b). Another study was conducted in Al-Takia PHC center from 15thseptember 2012 to 15th September 2013 showed that out of 184 women at the child bearing age (60.33%)had birth interval less than two years,(68.5%)below 25years significantly associated with birth interval less than two years(Abbas, 2015)**.S**imilar study done in health center and refered to hospital inBabol, northern, Iran in 2007 was identified that, Maternal age showed that a significant correlation with birth interval. (Hajian-Tilaki et al., 2009).

Women education also found that the major determinants of birth interval. A community base one to two case-control study(n=636) that conducted in Arba Minch district ,gammo gofa,Ethiopia on determinant of short inter birth interval among reproductive age mothers from February to april 2014 indicated that, having no formal education (AOR = 2.36, 95% CI [1.23–4.52] of respondents were independent predictors of short birth interval.(Hailu and Gulte, 2016b).Another finding from Ethiopia, community based one to one case-control study(n=652) was conducted in rural pastoral communities of southern on determinants of inter birth interval among married women in 2012 ,showed that, the median of birth interval was 31 and 40 months among cases and controls respectively and showed that mothers' educational status [(AOR=1.89) 95% CI(1.15-3.37)], was statistically significant associated with birth intervals(Begna et al., 2013).

A community base cross sectional study(n=826) conducted on practice of child spacing and its associated factors among women of child bearing age in Ilubabor, Oromia,southwest Ethiopia in 2016 revealed that women with no formal education were 2.56 times more likely to practice short birth interval than those with higher education[AOR=2.56,95%CI,(1.60-3.42)](Tsegaye et al., 2017).similar studies found from Radii Health and demographic

surveillance system(HDSS),Tanzania , Kirtipur municipality of Kathmandu district showed that education had linear relationship with birth interval(Exavery et al., 2012b).

Education of females appears to have a profound effect on birth spacing, especially when girls are able to complete the primary grades. A community base cross sectional study (n=350) conducted on birth spacing and its determinants among women of Kirtipur municipality of Kathmandu district revealed that the mean birth interval was 4.05years (3-5.83).only very few women (7.1%) had 5years. The birth interval is significantly associated with education status(Shakya et al., 2011).

Facility base one to two case-control study(n=330)done mekelle city, northern Ethiopia in 2017 on determinants of birth interval on among child bearing age women showed that the mean age of respondents was 31.45with SD+/-5.03 years and showed that women's education had protective effect on women who had no formal education 2.5 times more likely to develop short birth interval than who have formal education [AOR=2.5)95%CI(1.12–5.71](Amare et al., 2018).Similarly, the same studies done in Uganda and Saudi had that education had similar effect on birth interval(Ronald et al., 2016, Abdel-Fattah M et al., 2007).

According to Longitudinal data collected in the Radii Health and Demographic Surveillance System revealed that among multiparous women found that the lower the maternal education the higher the proportion of non-adherence.Inter-birth intervals of women who had no formal education (never been to school) were 27% more likely to be non-adherent to the recommendation compared to inter-birth intervals of women who had secondary education and higher (AOR=1.27, 95% CI 1.01 -1.60)(Exavery et al., 2012a).

The study done in southern Ethiopia showed that, women's who had no formal education were 1.9 times more likely to have short birth interval practice as compared to those who had formal education (AOR =1.89, 95% CI(1.15, 3.37))(Begna et al., 2013).Similarly, another study done in Ethiopia showed that mothers with no formal educational were about 3 times (AOR=3.40, 95%CL: [1.80-6.43]) more likely to have short inter birth interval as compared to those who attended formal education(Hailu and Gulte, 2015).

Another studies revealed that , among respondents who were highly educated had a higher risk of having the short birth intervals in which the risk of short birth interval on high educated respondents was1.51 higher than the low educated respondents(Kurniawati and Prasetyo, 2016).Finding from Iran and Bangladesh have also demonstrated that women with higher educational level have shorter birth interval(Fallahzadeh et al., 2013, de.Jonge et al., 2014).

Facility base study (n=786) of all women attend at Al Hada armed forced hospital was conducted on inter birth spacing between 1 st February 2005 and 31 st January 2006 showed that husband's work status was significant predictors of interbirth interval.(Abdel-Fattah M et al., 2007).Finding from,northern Ethiopia in 2017 on determinants of birth interval on among child bearing age women showed that women who had husband's occupation daily laborer [AOR=2.6),95%CI[1.16–6.03] had statistically significant associated with short birth interval(Amare et al., 2018).Where as community base cross sectional study(n=826) conducted in Ilubabor zone of oromia, southwest Ethiopia in 2016 revealed that compared to mothers whose husbands were employee, women whose husbands were farmers were more likely to have short birth interval [AOR=3.50,95% CI(1.29-4.42)](Tsegaye et al., 2017).

Wealth index of respondents was also found to be strong predictor of birth interval. A community base one to two case-control study(n=636) was conducted in Arba Minch district, gammo gofa,Ethiopia on determinant of short inter birth interval among reproductive age mothers from February to april 2014 indicated that, having poor wealth index [(AOR=4.89),95% CI; [1.81–13.25] of respondents were independent predictors of short birth interval.(Hailu and Gulte, 2016b).The study conducted Ilubabor zone of Oromia, southwest, Ethiopia in 2016, revealed that women with fourth wealth quartile were 3.18 times more likely to have short birth interval than those with the lowest wealth quartile.[AOR=3.18,(95% CI,1.75-4.56)](Tsegaye et al., 2017). The median length of the birth interval increases with wealth, from an overall average of 30.5 months for the lowest quintile in each survey to 36.1 months for the highest quintile.(Rutstein, 2008).

A community base study (n=826) conducted on practice of child spacing and its associated factors among women of child bearing age in Oromia, southwest Ethiopia in 2016 revealed that women from rural areas were about 3times more likely to have short birth interval than

their urbancounterparts[AOR=3.39(95%CI,(1.13-4.10)](Tsegaye et al., 2017).The study from EDHS 2016 also showed that rural women have shorter birth intervals than urban women (34.0 versus 46.8 months)(CSA, 2016).

A community- based study done in Ethiopia on married women's decision –making power in family planning use and its determinats in Basoliben,Northwest Ethiopia showed that husband's decision making power on family planning use for additional child was 4 times more likely to have short birth interval(AOR=4.0;95% CI:1.9,8.5)(Alemayehu et al., 2020). The study done in Egypt showed that husband's decision maker on the use family planning for birth interval(Consortium, 2004).

2.2.2. Reproductive characteristics

Sex of the index child was found to be a strong determinant of birth interval among respondents. A community base one to two case-control study(n=636) was conducted in Arba Minch district ,gammo gofa,Ethiopia on determinant of short inter birth interval among reproductive age mothers from February to april 2014 indicated that,preceding child being female (AOR=5.73, 95% CI;[3.18–10.310]) of respondents were independent predictors of short birth interval(Hailu and Gulte, 2016b).Similar study conducted in rural pastoral communities of southern Ethiopia ,also showed that sex of the child[(AOR=1.72) 95% CI(1.17, 2.52)] were statistically significant associated with birth intervals(Begna et al., 2013).

Facility base one to two case-control study(n=330)done mekelle city, northern Ethiopia in 2017 on determinants of birth interval on among child bearing age women showed that, sex of previous child being female [AOR=2.3] 95%CI[1.20-4.71], had statistically significant associated with short birth interval.(Amare et al., 2018).Study from Saudi, Nepal and Kirtipur municipality of Kathmandu district was providing similar evidence(Abbas, 2015, Abdel-Fattah M et al., 2007, Md. Abdul Latif and N. Sharat Singh, 2014, Karkee and Andy, 2016, Shakya et al., 2011).

According to parity , study conducted in Al-Takia Primary Health Care center in baquba city,showed that about half of women with short birth interval (<2years) had high parity (>5live births) showed strongly associated birth interval (Abbas, 2015)**.**But,finding from

northern Iran reveal that birth interval <3years,decreased significantly with increasing parity(Hajian-Tilaki et al., 2009). Parity of four or more was associated with 72 % decrease in the odds of a short birth interval compared to a parity of one at the start of the birth interval (AOR 0.28, 0.19-0.4 1)(de.Jonge et al., 2014) .Increased parity also causes increase in risk of having subsequent birth ,that when the parity is increased, the length of birth interval decreases(Singh et al., 2010).

2.2.3. Healthcare characteristics

Facility base of case control study (n=218) on factors associated with short birth intervals among women delivering at Mbarara Hospital in south western Uganda revealed that mothers who were not using contraception between their last births were 6times more likely to experience short birth interval(AOR 5.91, 95% CI (4.02 , 8.69))(Ronald et al., 2016).

The study from Ethiopia also showed that women who were not using contraceptives were 4.42 times more likely to give birth within short period of time than contraceptive users [AOR = 4.12 (95% CI: 2.71, 5.82)](Tsegaye et al., 2017).Another study done in Ethiopia, indicated that women who did not use contraceptive were 3.01 times more likely to have short birth interval as conpared to women who use contraceptive [AOR=3.01(95% CI:1.68-5.39)](Hailu and Gulte, 2016b).The study done in Indonesia showed that respondents who did not use contraception were at risk 1.50times (AOR=1.5,95%CI=1.35 to 1.69) more likely to have shorter birth interval than respondents who used modern contraceptives(Kurniawati and Prasetyo, 2016).

The longitudinal data collected in the Radii Health and demographic surveillance system(HDSS) from January 1999 to December 2010 were analyzed to investigate birth spacing practices among women of child bearing age on levels and correlates of non-adherence to WHO recommended inter birth intervals in rufiji,Tanzania showed that inter birth intervals beginning with children born elsewhere other than in health facility were 85% more likely to be non-adherent compared to those beginning with children in health facility[AOR=1.85,95%CI:1.71-2.00)](Exavery et al., 2012b).

The study done in northern Ethiopia on the effect of sex of the last child on short birth interval practice was showed that mothers who gave birth at home were 4.75times more

likely to have short birth interval as compared to women who gave birth at health institution [AOR=4.74, 95% CI:2.3-9.79)](Tessema et al., 2013).

Regarding to the duration of breast feeding, the study done in Arba Minch district, gammo gofa,Ethiopia, indicated that respondents who had,duration of breast feeding for less than 24 months(AOR: 66.03, 95% CI; [34.60–126]),were more likely have of shorter birth interval.(Hailu and Gulte, 2016b).Another study done inoromia, southwest Ethiopia in 2016 revealed that mother who breast fed their child for more than 12 months were 5times more likely to practice short birth interval than those who breast fed for 24 months or more [AOR=5.36,95% CI,(3.43-6.34)](Tsegaye et al., 2017).

Facility base one to two case-control study(n=330)done mekellecity, northern Ethiopia in 2017 on determinants of birth interval among child bearing age women showed that duration of breast feeding less than 24 months was statistically significant associated with short birth interval[AOR=16.0],95% CI[7.97–32.43](Amare et al., 2018).The study conducted in Arsi zone in Ethiopia on duration of birth interval and associated factors among married women showed that duration of breast feeding of index child for less than 24 months were more likely to have short birth interval (AOR=9.66,95%CI:8.93,19.40) (Seifadin and Tesfaye, 2019).

2.3. Conceptual Framework

As a summary, the below conceptual framework illustrates that, there are multiple determinant characteristicsdetermining birth-interval:-Sociodemographic and economic factors, reproductive factors and healthcare related .The relationship between factors that may contribute to increase or decreases inter- birth interval.Among those factors, Healthcre services are proximate factors.

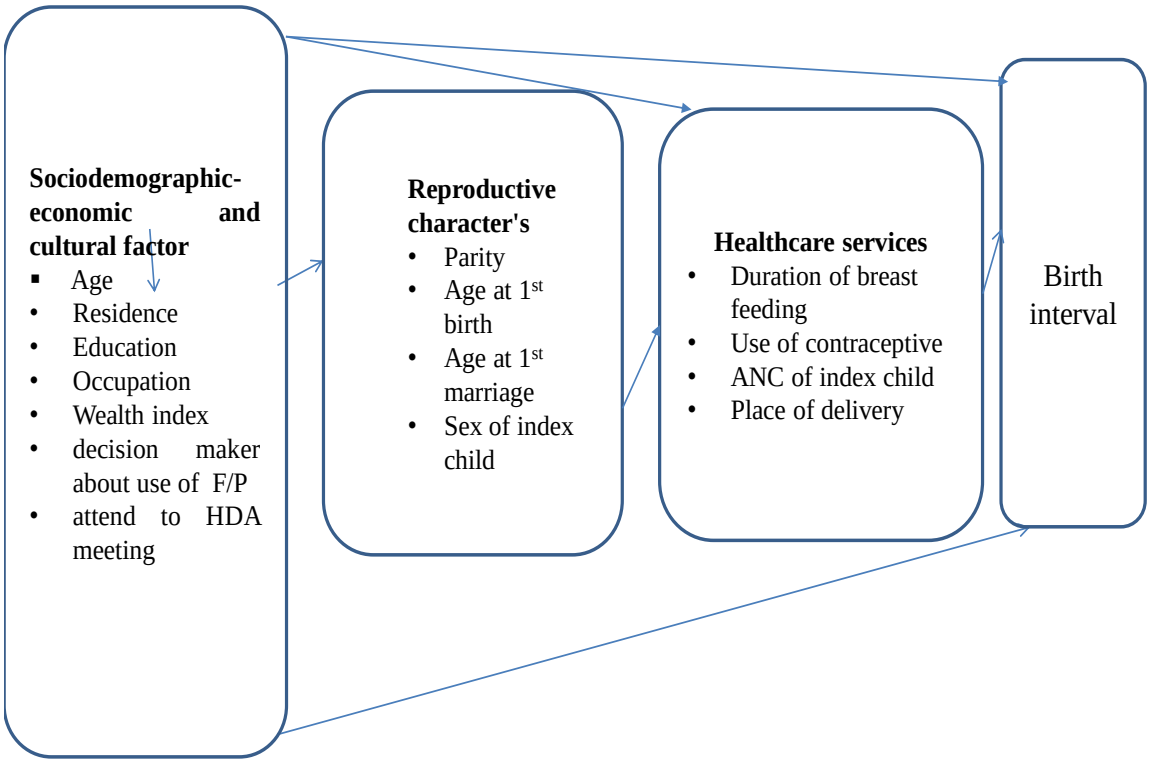

Figure**1:** Conceptual framework on determinants of birth-intervals among married multiparous women (Developed from reviewed literature).

3. METHODS AND MATERIALS

3.1. Study area and period

The study was conducted in Chinaksen district of Oromia region in Eastern Ethiopia from March, 15 to june 20, 2019. Chinaksen is one of 24 woredain Eastern Hararge Zone ; located at 654Km from Addis Ababa in East direction with a total land area of 1494.96Km2 .The woreda has 49 Rural and three Urban Kebeles in 2018. As per on the 2007 national

population projection, the district has 119123 total populations (48840 are male and 60752 are female), Women in reproductive age and pregnant women are 5588 WRA and 4284 PW respectively in the 2018. The Potential health service coverage of the district is 89% with a total of eight primary Health care unit (PHCU) and 52 Health posts providing routine health services.

3.2. Study design

A community based unmatched one to one case control study was conducted.

3.3. Population

3.3.1. Source Population

All married multiparous mothers who have at least two successive deliveries during previous five years prior to the data collection period.

3.3.2. Study Population

Married multiparous mothers who have at least two successive deliveries within the past five years who reside in randomly selected Kebeles of Chinaksen district.

Cases: Married multiparous mothers who have at least two successive deliveries during previous five years that inter-birth intervals of less than 03 years between the latest two successive deliveries.

Controls: They was married multiparous mothers who have at least two successive deliveries and have history of optimum birth intervals (birth intervals of 3-5 years including 3 and 5 years) between the latest two successive deliveries.

3.4. Inclusion and exclusion criteria

3.4.1 Inclusion criteria

Married multiparous mothers who were permanent residents of the district and have two successive deliveries in previous five years prior to data collection period were included.

3.4.2. Exclusion criteria

Married multiparous mothers who havetwo successive deliveries and gave the index child through caesarean delivery ,history of twin on the first of two successive deliveries , those who married more than once ,those critically sick/mentally ill cases who cannot respond to interview, were excluded.

3.5. Sample size determination

The sample sizes for this study was determined by stat calc modules of Epi Info version 3.5.1 software using two population proportion formulas taking in to account of the following parameters and major determinants.

After reviewing several predictors, fourmajor determinants of IBI were considered and predictor leading to the largest sample size was used to estimate the minimum required sample sizes in the study. Certain parameters; P2 (proportion exposures among controls) and AOR from similar studies done elshewere in Ethiopia with 10% non-response rate, 80% power, 95% CI and 5% significance level and one to one ratio of controls to cases(Table1).

Table1:Sample size estimation for determinants of inter-birth interval among married multiparous women in Chinaksen woreda, Eastern Ethiopia, 2019.

Determinants	P2 (%	AOR	Initial samples			Non-	Final samples			Reference
			Cases	Contro	Total		Cases	Contro	Total	
No formal education	69	1.99	199	199	398	40	219	219	438	(Begna et al., 2013)
Pregnancy plan	29.5	2.73	75	75	150	16	83	83	166	
Husband's illteratecy	48.3	2.01	145	145	290	30	160	160	320	(Hailu and
Not use	33.3	3.01	61	61	122	12	67	67	134	

Contraceptive										Gulte, 2016b)

After comparing above four predictors, No formal education leadsto the largest number ; n= 438 , which was the final sample size used in the study.

3.6. Sampling Technique

Two get the study subjects, first, the study area was stratified as urban and rural areas (Kebeles). Then, one of three urban kebeles and 17 from 48 rural kebeles were randomly selected by lottery method and census of married multiparous mothers among randomly selected kebeles of Chinaksen woreda was done, before the actual data collection process was implemented .Then each house hold from the eighteen kebeles was visited and the total family size was registered. For those households with married multiparous mothers having minimum of two deliveries and both delivery were within the last five years prior to the study period was identified and corresponding house identification number was given to develop sampling frame. Based on the above techniques,a total of **682**cases and **577**controls were identified and eligible for the study. Finally using sampling frame created for each kebele, simple random sampling technique was employed to select the house holds that were included in the study subjects defined as cases and controls. Probability to proportional size allocation technique was used in the determination of the number of kebeles and study units included in each kebele. If two or more eligiblemothers from a house hold who satisfied the inclusion criteria, lottery methods was employed to select one mother from that house hold.

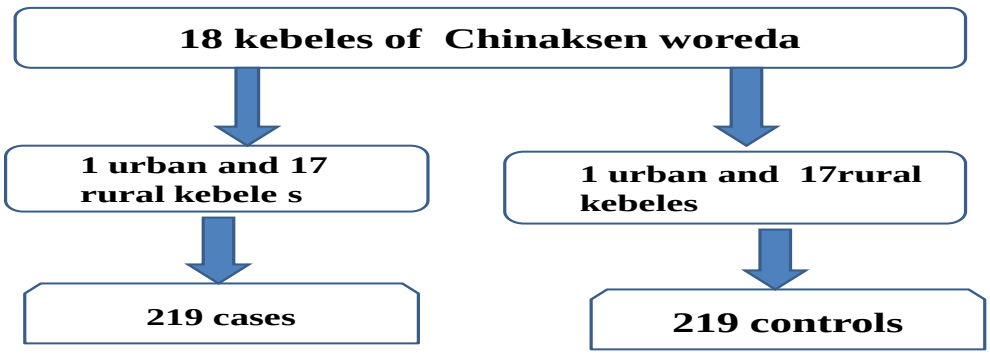

Figure 2: Sampling procedure on the study on determinants of inter-birth interval among married multiparous mothers in Chinaksen district, Eastern Ethiopia, 2019.

3.7. Data Collection Methods

3.7.1 Data collection instruments

Pretested-structured questionnaires was used to collect data from participants. Tools have Socio-demographic factors, socio-economic status, Reproductive and Healthcare characteristics. The questionnaire are taken from different previous done studies and adapted to the local context of the study area (Begna et al., 2013, Hailu and Gulte, 2016b). It is prepared first in English and then translated to "Afan Oromo" and Somali by the language experts for the data collection purpose, to check its consistency, the questionnaire is translated back to English by another language experts.

3.7.2. Data collectors

Nine high school graduate students who are familiar with the local language and customs(who speaks both Afan Oromo and Somali language) were recruited as interviewers.Training of data collectors and supervisors was given for two days on ethics, tools , how to conduct interview and importance of privacy and confidentiality of the information obtained from the respondents before beginning data collection.

3.7.3. Data collection procedures

Nine high school graduate students who trained were carried out the pretest on 5% of the sample size (11cases and 12 controls) from one Kebeles (keloroga), before conducting the main study.Based on the result, data collectors was reoriented and the questionnaire was modified as appropriate. Data collected from each respondent was checked for completeness, clarity and consistency by the principal investigator and the supervisors at the end of data collection day to minimize the errors created during interview as early as possible.

3.8. Study variables

3.8.1 Dependent variable

Inter-birth interval(short birth interval,optimal birth interval)

3.8.2 Independent variables

Socio demographic and economic characteristics

Age of mother, occupational status of the mother ,marital status of the mother, ethnicity, educational status of the mother,religion,husband's educational status,husband's occupational status , wealth index, decision-maker in the family on inter-birth interval ,HDA meeting and intra house hold violence .

Reproductive and healthcare characteristics

Age at first marriage, sex of the index child, parity ,duration of breast feeding,Pregnancyplan,place delivery ,ANC visit during previous pregnancy, use of contraceptive methods.

3.9. Operational definitions

Short inter- birth interval: It refers to less than 3 years birth intervals between the birth of the child under the study and the immediately preceding live and surviving birth to the mother.

Optimal birth interval: It denotes to 3-5 years birth interval(including 3 and 5years) between the birth of the child under study and the immediately live and surviving birth to the mother. **Permanent resident**: Mothers who have been living in Chikaksen Woreda for at least six months.

Decision making power: The power of women/husband to decide on optimal bith interval by herself/himself or together with themselves.

Wealth index: Household wealth index status was estimated by principal component analysis based on thirty eight household variables (source of drinking of water, presence of own farm land, size of own farm land, type of toilet facility, electricity, radio, mobile phone, roof of house with corrugated iron sheet, sleeping bed and number of cows,oxen,horse/mules/donkeys, goats/sheep and hens,) (EDHS,2016)

3.10. Data Quality Control

Two days training that focus on relevance of the study, objective of the study, ethical issues and informed consent prior to interview and interviewing techniques was given for data collectors and supervisors. Questionnaires was prepared in English and translated in to "Afan Oromo" and Somali languages and then, translated back to English for consistency by two independent translators. Data collectors were trained on how to avoid challenges during data collection particularly duplication and incomplete record. Interviewers would ask respondents what is written on the questionnaires. Supervision was conducted daily during data collection to avoid incompleteness of data. 5% of the sample size (11 cases and 12 controls) from one Kebeles (karaloga) which would not be included in the study and based on findings, tool was modified. Data was double entered into EpiData version 3.1softwares.

3.11. Data Processing and Analysis

Collected data were checked first for data incompleteness and inconsistence. Data were double entered into Epi data version3.1and analyzed by SPSS version 24. Descriptive statistics (frequency and percentage were used for categoricalvariables and mean and standard deviation were used for normally distributed continuous covariates while median and IQR were used for skewed continuous covariates). Presence of statistical association between dependent and each independent variables was observed using cross tabulation and bivariable logistic regression findings during which a predictor with $P<0.25$in crude analysis was selected as a candidate for multivariate analysis. Multivariable logistic regression analysis was conducted to identify determinants of inter birth interval. P value<0.05 and AOR with 95%CI was used to identify significance and strength of adjusted associations.

3.12. Ethical consideration

Ethical clearance was obtained from Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University CHMS prior to conduct this study. Official permission letter from school of post graduate(SGS) was written to East HarargeZonal health office. Similarly from zonal health office, the circular letters was written to both Chinaksen woreda Administration and Health office. Informed voluntary, written signed consent was obtained from each participant before interview. Participants was notified on the purpose of the study and their right to refuse or to participate in the study. Participants was interviewed in a separate place to keep privacy and was informed as their information would not be shared to third persons without her permission. The name is not written and collected data was coded.

3.13. Dissemination of findings

The study findings were submitted and communicated to Haramaya University School of graduate studies. An attempt will made to present the result of this study in the scientific conferences and publish on national or international peer reviewed journals.

4. RESULTS

4.1. Characteristics of study participants

4.1.1. Socio-demograhic and Economic characteristics

A total of 210 cases and 210 controls were participated in the study with the same response rate of 96% for both cases and controls. The majority; 189 (90.0%)) of cases and 184 (87.6%) of controls were living in rural areas. About 54(25.7%) of cases and nearly one-third, 22(10.5%) of the controls were youths (15-24 years). About 156(74.3%) of cases and 154(73.3%) of controls had no formal education. All most all 204(97.1%)cases and 200(95.7%) of controls were muslim.The majority,176(83.8%) of cases and 162(77.1%) of controls were Oromo in ethinicity. About,46(21.9%) of casesand 39(18.6%) of controls were in the poorest wealth index (Table 2)

Table 2 : Socio-demographic and related characteristics of participants, Chinaksen woreda, Eastern Ethiopia, 2019 (n=420)

Characteristics		Cases (%)	Controls (%)
Age categories (in years)	15-24	54(25.7)	22(10.5)
	25-29	83(39.5)	67(31.9)
	30-34	41(19.5)	63(30.0)
	≥ 35	32(15.2)	58(27.6)
Residence area	Rural	189(90.0)	184(87.6)
	Urban	21(10.0)	26(12.4)
Ethnicity	Oromo	176(83.8)	162(77.1)
	Amhara	9(4.3)	14(6.7)
	Somale	22(10.5)	31(14.8)
	Gurage	3(1.4)	3(1.4)
Education	No formal education	156(74.3)	154(73.3)
	Primary education	43(20.5)	40(19.0)
	Secondary and above	11(5.2)	16(7.6)
Education of husband	No formal education	140(66.7)	119(56.7)
	Primary education	70(33.3)	91(43.3)
	Secondary and above	16(7.6)	18(8.5)
Occupation	House wife	133(63.3)	110(52.4)
	Farmer	48(22.9)	54(25.7)
	Merchant	19(9.0)	32(15.2)
	Employee	10(4.8)	14(6.7)
Occupation of husband	Employee	14(6.7)	22(10.5)
	Farmer	164(78.1)	165(78.6)
	Merchant	27(12.9)	16(7.6)
	Daily labor	5(2.4)	7(3.3)
Wealth index	Poorest	46(21.9)	39(18.6)
	Poor	44(21.0)	39(18.6)
	Medium	54(25.7)	44(21.0)
	Rich	30(14.3)	40(19.0)
	Richest	36(17.1)	48(22.9)

4.1.2 Reproductive and Health care characteristics

About 61 (29.0%) of cases and 54(26.7%) of controls were married at age <18 years old for the first time. The majority, 166(79.0%) of cases and 62(29.5%) of controls were not used modern contraceptives. More than half 146(69.5%) of cases and 189(90.0%) of controls were attended ANC during pregnancy of the preceding child. About 128(61.0%) of cases and 61(29.0%) of controls were delivered at home**(**Table 3**).**

Table 3: Reproductive and health care characteristics of the study participants Chinaksen Woreda, Eastern Ethiopia, 2019 (n=420)

Reproductive characteristics		**Cases (%)**	**Controls (%)**
Age at first marriage	≥ 18	149(71.0)	154(73.3)
	<18	61(29.0)	56(26.7)
Age at first delivery	<20years	100(47.6)	83(39.5)
	≥ 20 years	110(52.4)	127(60.5)
Parity	2	84(40.0)	51(24.3)
	3-4	68(32.4)	85(40.5)
	≥ 5	58(27.6)	74(35.2)
Ever use of contraceptive	No	166(79.0)	62(29.5)
	Yes	44(21.0)	148(70.5)
ANC attendance of index child	No	64(30.5)	21(10.0)
	Yes	146(69.5)	189(90.0)
Place of preceding delivery	Home	128(61.0)	61(29.0)
	Facility	82(39.0)	149(71.0)
Sex of the preceding child	Male	91(43.3)	132(62.9)
	Female	119(56.7)	78(37.1)
Intention of last child	Unplanned	71(33.8)	21(10.0)
	Planned	139(66.2)	189(90.0)
Decision maker about FP use in the family	Myself only	51(24.3)	60(28.6)
	Together with husband	130 (61.9)	139(66.2)
	Husband only	29(13.3)	11(5.2)
HDA meeting	Not attended	122(58.1)	60(28.6)
	Attended	88(41.9)	150(71.4)
Intrahousehold Violence practice	Yes	188(89.5)	188(89.5)
	No	22(10.5)	22(10.5)

4.2. Determinants of inter birth interval

During bivariate analysis: Age of mother, husband's education, Wealth index, decision maker on use of family planning,ANC attendance of index child,Parity, contraceptive use between the last two births,home delivery of index child, Sex of index child and HDA meeting were determinants of inter- birth interval at **P<0.25**.

In adjusted analysis, six independent variables: age of mother, wealth index,decision maker on use of family planing ,did't use contraceptivebetween two children, delivery place of index child and sex of index child were independent predictors of short birth interval.

The odds of short inter-birth interval was about 7times higher among youth age groups (15-24 years) compared to mothers in the age groups of > 35 years [(**AOR= 7.12, 95% CI:(2.99,16.93)].**Wealth index of the mother was also a strong predictor of short birth interval. The odds of having short interbirth interval were higher for mothers who belong to the poorest wealth index than the richest ones among cases and controls [**(AOR:2.55, 95% CI (1.17–5.56)].** Mothers whose their husbands decide on use of their family planning was 5times more likely to have of short inter-bith interval compared to mothers who decide about contraceptive use by themselves[(**AOR=5.03, 95% CI:(1.70,14.89)].**

Mothers who did't use contraceptives between two children were 7.8 times more likely to have short inter-birth interval as compared those who use contraceptives [**(AOR=7.81, 95% CI: (4.57, 13.33)].** The odds of short birth interval were 2times higher among mothers who gave index child birth at home compared to those who delivered in facilities among cases and controls [**(AOR= 2.03, 95% CI: (1.21-3.42)]**.Mothers who have female index child were about 2.43 times more likely to have short inter birth interval compared to those who have male index child[**(AOR=2.43, 95% CI: (1.49, 3.97)].**

Table 4:Multivariable logistic regression of determinants of inter birth interval among married multiparous mothersChinaksen Woreda, Eastern Ethiopia, 2019 (n=420).

Characteristics	Category	Cases:	Controls	P-value	COR((95%CI)	AOR((95%CI)
Age category (in years)	17-24	54	22	<0.0001	4.45(2.31 ,8.58)	7.12(2.99,16.93)
	25-29	83	67	0.003	2.25(1.31 ,3.85)	2.99(1.47, 5.09)
	30-34	41	63	0.58	1.18(0.66 ,2.12)	1.30(0.60, 2.79)
	≥ 35	32	58		1	1
Education of husband	No formal education	140	119	0.04	1.53(1.03 ,2.27)	1.37(0.76, 2.46)
	formal education	70	91		1	1
Wealth index	Poorest	46	39	0.14	1.57(0.86, 2.89)	2.55(1.17,5.56)
	Poor	44	39	0.19	1.50(0.82 , 2.77)	0.96(0.43, 2.12)
	Medium	54	44	0.10	1.64(0.91, 2.95)	1.45(0.68, 3.05)
	Rich	30	40	1.00	1.00(0.53,1.90)	0.89(0.39, 2.45)
	Richest	36	48		1	1
Decision maker on use of family planning	Myself only	51	60		1	1
	Together	130	139	0.67	1.1(0.71 ,1.71)	0.79(0.45,1.40)
	Husband only	29	11	0.005	3.1(1.41 ,6.82)	5.03(1.70,14.89)
ANC attendance for index child	No	64	21	<0.001	9.01(5.77 ,14.06)	1.70(0.84,3.43)
	Yes	146	189		1	1
Parity	=<2	84	51	<0.001	3.95(2.30 ,6.76)	0.85(0.31,2.31)
	3-4	68	85	0.003	2.101(1.29,3.43)	0.66(0.30, 1.47)
	≥ 5	58	74	0.93	1.021(0.64,1.63)	1
contraceptive use between two birth	No	166	62	<0.001	9.01(5.77 ,14.06)	7.81(4.57,13.33)
	Yes	44	148		1	1
Delivery place of index child	Home	128	61	<0.001	3.81(2.54 ,5.73)	2.03(1.21,3.42)
	Facility	82	149		1	1
Sex of index child	Female	119	78	<0.0001	2.21(1.50 ,3.27)	2.43(1.49 ,3.97)
	Male	91	132		1	1
HDA meeting	No	115	80	<0.0001	3.47(2.31 ,5.20)	1.29(0.76,2.17)
	Yes	95	130		1	1

5. DISCUSSION

In this study among socio-economic and demographic and reproductive factors six independent variables: age being between15-24years old, poorest wealth index, husband's only decision maker on use of family planning , didn't use contraceptive between two children, home delivery of index child and female sex of index child were independent predictors of short birth interval.

In this study, the odds of having short birth interval was about 7.12 higher among mothers who were being in the Age of 15-24 years old as compared to mothers who were being ≥ 35years old. This finding is in line with study done in Ethiopia and Mozambique (Seifadin and Tesfaye, 2019, Saumya R et al., 2006). It is possible that older women may have already their desired family sizes as age advances compared to youth women, hence likely to delay subsequent births and also can be partly explained by the notion that recovery of ovarian function was faster among youngsters than older mothers. Inaddition, younger mothers are less likely to have exposure to health care information about family planning and optimal birth spacing than older mothers.

Wealth index of the mother was also a strong predictor of short birth interval. The odds of having short interbirth interval were higher for mothers who belong to the poorest wealth index than the richest ones among cases and controls. This finding is consistent with evidences from study conducted in Ethiopia (Hailu and Gulte, 2016b, Tsegaye et al., 2017) The reason might be wealth women are more likely to access health care information and afford healthcare services and materials thus can easly apply scientifically recommended for birth interval.

The odds of having short birth interval were increased when decision on birth space was made by husbands as compared to decision made by mothers. Husbands were the ultimate decision makers in deciding when to get pregnant for mothers who had short birth interval. This finding in line with the study done in Ethiopia and Egypt(Consortium, 2004, Alemayehu et al., 2020).Therefore a woman may chose not to space in order to satisfy her husband's desire

In this finding, women who didn't use contraceptives were more likely to have short birth interval as compared to women who used contraceptive. This study consistent with the study done, Uganda and Ethiopia (Hailu and Gulte, 2016a, Ronald et al., 2016, Tsegaye et al., 2017).

The odds of having home deliveries were more likely to have short birth interval as compared to those occurred in health facilities. This finding is in line with study conducted in Rufiji,Tanzania, (Exavery et al., 2012b, Tessema et al., 2013).Women who gave child at health facilities may have access to education on optimal birth interval, breast feeding ,family planning and adverse risks of pregnancy and pregnancy outcomes .This is thought to have a greater role of influencing short birth interval.

According to result of this finding, women's who had female index child were more likely to have short birth interval compared to mothers who had male index child. It may be due to the fact that in Ethiopia, parents have put typically highly value on son since it is treated as an economic asset and old age assurance as well as the bearer of the family name and it is therefore, less likely for mothers to exercise any means of birth control until they get the desired number of son. This view is incorporated with the some previous finding inEthiopia,Saudi, Nepal and Kirtipur municipality(Abbas, 2015, Abdel-Fattah M et al., 2007, Amare et al., 2018, Begna et al., 2013, Hailu and Gulte, 2016a, Karkee and Andy, 2016).

The strengths of this study, it is a community based case control study design which is better to explore the predictors. We tried to address the issue of selection bias by excluding women with have history of caesarian Section, twin index child and have two consecutive children from different fathers.

During interpreting the finding of the present study, the following limitation should be considered. Measuring duration of birth interval with the respondents' memory since women or their children in the study area have no birth certificates could introduce recall bias. Interviewer bias might underestimate the measure of effect and the quality of data. In addition to this, unusual large OR with large confidence interval also observed, which might be due to inadequate sample size to justify the strength of associations. But respondents

were critically informed about the importance of giving accurate information by assuring the confidentiality of their responses and it is logical to assume that biases less likely in birth interval as compared to other sensitive issues. Moreover, this study considered only a single inter-birth interval and therefore further researchers, involving more than one inter-birth intervals should be done to make these findings more explorative.

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

In this study, being in the age of youth(15-24)years , poorest wealth index, husband's only decision maker on use of family planning , didn't use contraceptive between two births , home delivery of index child and female sex of index child were significant determinants of short inter birth interval.

6.2. Recommendation

The interventions designed to address optimal birth spacing,were use of contraceptive methods, enhancing facility deliveries and increase women involvement on decision making of birth interval in the familyare important.

Awareness raising and cultural promotion of parents should also be made to avoid sex based interest.

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8. ANNEXXES

Annex 8.1. Participant Information Sheet and Informed voluntary Consent Form

My name is_____I am working as a data collector for the study being conducted in this kebele by **Bekry Aleye Reshid** who is studying for his master degree at Haramaya University, the College of Medicine and Health s science. I kindly request you to give me your attention to explain you about the study and being selected as study participant.

The study title

Determinants of inter-birth interval among married multiparous mother in Chinaksen District, eastern Ethiopia: community based case-control study

Purpose of the study

The principal aim of this study is to write a thesis as a partial fulfillment for a Master's program in Epidemiology for the principal investigator. Moreover, the findings of this study was used as an input for the district health managers and other stakeholders to identify determinants that hinder the optimal birth intervals in the community.

Procedure and duration

I was interviewing you, using a questionnaire to provide me with pertinent data that is helpful for the study.. The interview will take around 40 minutes, so I kindly request you to spare me this time for the interview.

Risk and Benefit

The risks of being participating in this study are very minimal, but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality

The information you will provide us was confidential. There was no information that will identify you in particular. The findings of the study was general for the study community and will not reflect anything particular of individual person. The questionnaire was coded to exclude showing names. No reference was made in oral or written report that could link participants to the research.

Right

Participation for the study is fully voluntary. You have the right to declare to participate or not in the study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of the benefits which you otherwise are entitled. You have right to not answering any questions that you don't want to answer.

Contact address

If there are any questions or enquiries any time about the study or the procedure, please contact:

Mobile: +251912926690
E-mail:sumayabakri90@gmail.com
IRERC Office phone: 0254662011
P.O.Box: 235, Harar, Ethiopia

Declaration of informed voluntary consent

I have read/was read for me the participant information sheet. I have clearly understood the purpose of the study, the procedure, the risk and the benefit, issues of confidentiality, the right of the participating and contact address for any queries. I have been given the opportunity to ask the questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my signature as indicated below.

Participant name and signature _____date_____

Data collector: Name _____ Signature _____Date_____

Annex 8.2. Participant information sheet and informed voluntary consent form for guardians (husband or parents) for mother's age less than 18 years.

My name is_____I am working as a data collector for the study being conducted in this kebele by **Bekry Aleye Reshid** who is studying for his master degree at Haramaya University, the College of Health and Medical science. I kindly request you to lend me your attention to explain you about the study to be conducted in this community.

The study title

Determinants of inter-birth interval among married multiparous mother in Chinaksen district, eastern Ethiopia: community based case-control study.

Purpose of the study

The principal aim of this study is to write a thesis as a partial fulfillment for a Master's program in Epidemiology for the principal investigator. Moreover, the findings of this study was used as an input for the district health managers and other stakeholders to identify determinants of birth interval that hinder the optimal birth intervals in the community.

Procedure and duration

I will interview your wife /your daughter using questionnaire which provide me with required information. The interview will take about 40 minutes for each subject, so I kindly request you to permit me to collect this data in this community.

Risk and Benefit

The risk of being participating in this study is very minimal, but only taking few minutes from your wife's /your daughter's time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners. In addition all mothers was counseled on delivery services by data collectors.

Confidentiality

The information that we will provided was kept confidential. There was no information that will identify your wife /your daughter in particular. The findings of the study was general for the study community and will not reflect anything particular of individual person. The

questionnaire was coded to exclude showing names. No reference was made in oral or written report that could link your wife /your daughter to the research.

Right : Participation for the study is fully voluntary. Your wife /your daughter has the right to participate or not to participate in the study. If your wife /your daughter decides to stop, they have the right to withdraw from the study at any time and this will not label them for any loss of the benefits which they otherwise are entitled. Your wife /your daughter has the right to not answering for any questions that they don't want to answer.

Contact address: If there are any questions or enquiries any time about the study or the procedure, please contact:

Mobile: +251912926690/+251930075597

E-mail:sumayabakri90@gmail.com

IRERC Office phone : 0254662011

P.O.Box: 235, Harar, Ethiopia

Declaration of informed Voluntary Consent

I have read or it was read for me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that my wife or my daughter has the right to withdraw from the study at any time or not answer any question that they do not want. Therefore, I declare my voluntary consent on behalf of my wife/my daughter to allow her to participate in this study with my signature as indicated below.

_____ _____

Name and Signature of Guardians Date

_____ _____

Name and Signature of Data Collector Date

Annex8.3: Questionnaires of determinants of inter-birth interval among married multiparous mother in Chinaksen woreda, East Hararge Zone, Oromia, Eastern Ethiopia.

Instructions :Please circle (○) on the number provided in the questionnaire or fill in the empty spaces. Kindly respond to all questionsfreely and honestly. Do not write your names.

SECTION 0: QUASTIONNIER IDENTIFICATION DATA

001 QUASTIONNIER IDENTIFICATION NUMBER_____

002 REGIONS: Oromia___

003 ZONE: East Hararge

004 Woreda: Chinaksen

005: Kebele and village --------,------

006 RESULT CODES:_____

Completed =1, Partially completed =2, Refused =3, Others =4

007: DATE OF INTERVIEW: _____/____/_____

Date Month Year

008: TIME OF START OF INTERVIEW:_____:_____

Hour Minute

009: TIME OF END: _____:_____

Hour Minute

010: CHECKED BY SUPERVISOR- NAME----------

Signature----------

Date----------

I. Socio-Demographic and related Characteristics				
101	Age in complete years	_____ years.		
102	Current residence area	1. Rural 2. Urban		
103	Ethnicity	1. Oromo 2. Amhara 3. Somale 4. Gurage 5. Others(Specify)_____		
104	Highest educational level of mother ever attend	1. No formal education 2. Primary education 3. Secondary education 4. College and above		
105	Highest educational level ever attend of your husband	1. No formal education 2. Primary education 3. Secondary education 4. College and above		
106	Your main occupation	1. House wife 2. Employee 3. Farmer 4. Merchant 5. Other specify		
107	Your husband's main occupation	1.Employee 2.Farmer 3.Merchant 4.Other Specify		
108	Age at first marriage.	----------in full years		
	Type .3 Reproductive characteristics			
301	Age at first delivery (in complete years)	_____years		
302	Parity (number of previous births ever had)	_____		
304	Age of index(first) child (in complete months)	_____months		
305	Age of last child (in complete months)	_____months		
306	Ever have used any modern contraceptives before you got pregnant of last child	1. Yes 2. No		
308	Do you follow attend ANC clinic during the immediate elder to the last child pregnancy?	1. Yes 2. No		
309	Where was the place of delivery of preceding child?	1. Health Post 2. clinic 3. Health Center 4. Hospital 5. Home		
311	What is sex of the preceding child ?	1. Male 2. Female		
312	Duration of EBF of him/her	_____months		

313	Duration of breast fed for him/her before becoming pregnant.	------Months		
314	Intention of last child	1. Unplanned 2. Planned		
315	Who made decision on use of family planning	1. Myself only 2. Together with my husband 3. Husband only 4. Other/specify		
318	Ever-participate on HDA meetings at kebele/village level?	1.No 0.Yes		
319	Have national family health guideline at home for previous delivery	1.No 0.Yes		
320	Having an autonomy on (your own) health seeking	1.No 0.Yes		
321	Having an autonomy on (your own) the major household purchases	1.No 0.Yes		
322	Having an autonomy on (own) the major household expenditures	1.No 0.Yes		
323	Having an autonomy on (own) visiting of friends/relatives or meetings	1.No 0.Yes		
324	History of violence (any form) in family during this pregnancy	1.Yes 0.No		

	Asset type	Response		
	Domestic animals			
401	Ox cattle(ox, cow)	No (0)	Yes (1)	
402	Caw	No (0)	Yes (1)	
403	Calf	No (0)	Yes (1)	
404	Hen and cock	No (0)	Yes (1)	
405	Goat	No (0)	Yes (1)	
406	Sheep	No (0)	Yes (1)	
407	Horse	No (0)	Yes (1)	
408	Donkey	No (0)	Yes (1)	
409	Mules	No (0)	Yes (1)	
	Durable asset			
410	Television	No(0)	Yes(1)	
411	Watch/clock	No(0)	Yes(1)	
412	Electricity	No(0)	Yes(1)	
413	Refrigerator	No(0)	Yes(1)	
414	Non-mobile telephone	No(0)	Yes(1)	
415	Mobile phone	No(0)	Yes(1)	
416	Car	No(0)	Yes(1)	

417	Motorcycle	No(0)	Yes(1)	
418	Cycle	No(0)	Yes(1)	
419	Cart	No(0)	Yes(1)	
420	Table	No(0)	Yes(1)	
421	Chair	No(0)	Yes(1)	
422	Bed	No(0)	Yes(1)	
423	Electric “Mitad”	No(0)	Yes(1)	
424	Own living house	No(0)	Yes(1)	
425	Own Agricultural land	No(0)	Yes(1)	
426	Stove	No(0)	Yes(1)	
	Productive asset			
427	Plough plow	No(0)	Yes(1)	
428	Axe	No(0)	Yes(1)	
429	Modern Beehive	No(0)	Yes(1)	
430	Traditional Beehive	No(0)	Yes(1)	
431	Hoe	No(0)	Yes(1)	
432	Shovel	No(0)	Yes(1)	
433	Sickle	No(0)	Yes(1)	
434	Water source	Non-pipe(0)	pipe(1)	
435	Type of floor	Earth (0)	Cement/wood(1)	
436	Type of wall	Mud (0)	Cement(1)	
437	Type of roof	Iron sheet(0)	Concrete(1)	
438	Toilet facility	Traditional pit latrine(0)	Ventilated improved pit latrine(1)	

Annex8.4: Ibsa hirmaattotaa qorannoof kennamuu fi unka walii galtee(Afan Oromo version)

Seensa: Akkam bultan/ooltan, maqaan koo_____jedhama. Ganda/Araddaa kana keessatti qorannoo obbo **Bakri Aliyyi Reshid**, digrii lammaaffaaf (mastarsiif) yunivarsiitii Haramaayaa, kolleejjii Saayinsii Fayyaatti barachaa jiruuf sassaabaan jira. Waa'ee qorannoo kanaa fi akkaataa qorannoo kanatti akka hirmaattan ittin filatamtan akkaan sinii ibsuuf yeroo muraasa akka naaf kennitan isin gaafadha.

Mata duree Qorannichaa: wantoota murtesso turti yeroo jiddu dahumsa lama, giddu jiru kan,dubartoota herumanii ilman lama fi lama ol qaban,kan Aanaa chinaksan,Godina Harargee bahaa, ,Baha Etiyoophiyaa keessaa jiran.

Sababa qorannichaa: Sababni guddaan qorannoon Kun barbaachiseef abbaan qoranichaa **obbo Bakri Aliyi Rashid** qorannoo **digrii lammaffaa** argachuuf isaan barbaachisu guutuufi dha. Dabalataanis, bu'aan qorannoo kanaa galtee hoggantoota fayyaa fi deeggartoota fayyaa biroof kan fayyaduu fi sababoota tadhii dhaluu/dahuu adda baasuuf kan gargaaru dha.

Adeemsaa fi turtii qoranichaa:Ani gaaffilee qophaa'aniin si gaaffadha,yoo guddate daqiiqa 40 qofa fudhata waan ta'eef yeroo kana naaf kennuun haala bilisa ta'een waan sitti dhagahamu naaf deebisi.

Faayidaa fi miidhaa qoranichaa:Sababa qorannoo kanatti hirmaattaniif rakkoon guddaa isin irra gahu hin jiru, yeroo keessan muraasa isin irraa fudhachuu keenyaan alatti.Faayidaa kallattiin sababa hirmaannaa keessaniin argattan hin jiru. Garuu odeeffannoon isin kenitan sababoota taadhi dahuuf nama saxilaan gargar basuuf qorannoo hedduu barbaachisuu dha.Akkasumas bu'aan qorannaa kanaa karoorsitoota fayyaa sadarkaa gaditti jiraniif galtee guddaa fi akkasuma yeroo qorannootti immoo haadha hundaaf gorsi waa'ee yeroo turti giddu dahumsa irratti warren raga sassaabbaniin ni kennama.

Iccitii eeguu: Ragaan isin nuuf kennitan iccitiin qabama. Kallattiin wanti addatti isin calaqqisu/ibsu asirratti barreeffamu hin jiru.Bu'aan qorannoo kanaa ummata naanoo kanaa malee addatti hirmaattota kan calaqqisu miti. Deebiin keessan yommuu galmeeffamu maqaa keessan hin dabalatu, afaaniinis tahe barreeffamaan hirmaattota addatti qorannoo kanaan walitti kan hidhu hin jiru.

Mirga: Hirmaannaan fedhii keessan irratti kan hundaa'e dha. Qorannoo kana irratti hirmaachuuf murteessuu yookiin dhiisuu dandeessu. Hirmaachuuf murteessitan illee yeroo barbaaddan qorannoo kana addaan kuttanii bahuuf mirga guutuu qabdu. Sababa kanaan faayidaa isin argachuu qabdan kan dhabdan hin jiru. Gaafii isin deebisuu hin barbaanne yoo jiraate deebisuuf dirqama hin qabdan.

Walquunnamtii kamuu barbaachisuuf: Gaafii yoo qabaattan yookiin ibsa yoo barbaaddan yeroo barbaaddanitti lakkoofsa bilbilaa qorataa qorannoo kanaa:

Obbo Bakri Aliyi Rashid

Tessoo:Chinaksan

Bilbila: 0912926690/0930079755

Email:sumayabakri90@gmail.com

Koree naamusa qorannaa dhaabbata kolleejii saayinsii fayyaa,Yuunivarsiitii Haromaaya lakk, bilbilaa **0254662011 ykn** lakkoofsa poostaa **235**, Harar fayyadamuu dandeessu.

Ibsa fedhii hirmaataa qoranoo ta'uu ykn mirkaneessuu: Ibsa hirmaattota qorannoof kennamuu dubbiseera/ naa dubbifameera. Faayidaan qorannoo kanaa sirriitti naaf galee jira, akkaataa, rakkoo fi faayidaa akkasumas waa'ee iccitii eeguu, mirgaa hirmaataan qabu, akkasumas walquunnamtii(walittidhufeenya) kamuu barbaachiseef teessoon natti himameera. Waan naa hin galle gaafachuuf carraan naa kennameera.wayita kam iyyuu qorannoo kana addaan kutee bahuu akkan dandahu, akkasumas gaaffiin debisuu hin barbaanne deebisuuf akkaan hin dirqamne. Kanaafuu qorannoo kanatti fedhiin kan hirmaadhu ta'uu mallattoo koon nan mirkaneessa.

Maqaa fi Mallattoo hirmaataa_____guyyaa_____

Maqaa raga sassaabaa _____Mallattoo _____Guyyaa _____

Annex 8.5:Ibsa hirmaattotaa qorannoof kennamuu fi Uunkaa Hayyama Guddiftuu (abbaa manaa) kan hadha urmiin wagga 18 gad tahee itiin gutamu

Seensa: Akkam bultan/ooltan, maqaan koo_____jedhama. Ganda/Araddaa kana keessatti qorannoo obbo **Bakri Aliyyi Reshid**, digrii lammaaffaaf (mastarsiif) Yunivarsiitii Haromaaya, kolleejjii Saayinsii Fayyaatti barachaa jiruuf sassaabaan jira. Waa'ee qorannoo kanaa fi akkaataa qorannoo kanatti akka hirmaattan hati mana/intalii keessan ittin filatamtan akkaan isinii ibsuuf yeroo muraasa akka naaf kennitan isin gaafadha.

Mata duree Qorannichaa: wantoota murtesso turti yeroo jiddu dahumsa lama, giddu jiru kan,dubartoota herumanii ilman lama fi lama ol qaban,kan Aanaa chinaksan,Godina Harargee bahaa, Baha Etiyoophiyaa keessaa jiran.

Sababa qorannichaa: Sababni guddaan qorannoon Kun barbaachiseef abbaan qoranichaa **obbo Bakri Aliyi Rashid** qorannoo digrii lammaffaa argachuuf isaan barbaachisu guutuufi dha. Dabalataanis, bu'aan qorannoo kanaa galtee hoggantoota fayyaa fi deeggartoota fayyaa biroof kan fayyaduu fi sababoota daddafanii dahuu adda baasuuf kan gargaaru dha.

Adeemsaa fi turtii qoranichaa:Ani gaaffilee qophaa'aniin hadha mana/intala kee gaaffadha,Yoo guddate hamma daqiiqa 40 qofa irra fudhata waan ta'eef yeroo kana naaf kennuun haala bilisa ta'een waan sitti dhagahamu naaf deebisaan.

Faayidaa fi miidhaa qoranichaa:Sababa qorannoo kanatti hirmaattaniif rakkoon guddaa isaan irra gahu hin jiru, yeroo isaanii muraasa irraa fudhachuu keenyaan alatti.Faayidaa kallattiin sababa hirmaannaa keessaniin argattan hin jiru. Garuu odeeffannoon isaan kennaan sababoota taadhi dahuuf nama saxilaan gargar baasuuf qorannoo hedduu barbaachisuu dha.Akkasumas bu'aan qorannaa kanaa karoorsitoota fayyaa sadarkaa gaditti jiraniif galtee guddaa fi akkasuma yeroo qorannootti immoo haadha hundaaf gorsi waa'ee yeroo turti giddu dahumsa irratti warren raga sassaabbaniin ni kennama.

Iccitii eeguu: Ragaan hatii mana/intalli kee nuuf kennaan iccitiin qabama. Kallattiin wanti addatti hadha mana/intalaa kee calaqqisu/ibsu asirratti barreeffamu hin jiru.Bu'aan qorannoo kanaa ummata naanoo kanaa malee addatti hadha mana/intala kee kan calaqqisu miti. Deebiin hadha mana/intala kee yommuu galmeeffamu maqaa ishee hin dabalatu,

afaaniinis tahe barreeffamaan hadha mana/intala kee addatti qorannoo kanaan walitti kan hidhu hin jiru.

Mirga: Hirmaannaan fedhii hadha mana/ intala kee irratti kan hundaa'e dha. Qorannoo kana irratti hirmaachuuf murteessuu yookiin dhiisuu niidanda'u. Hirmaachuuf murteessan illee yeroo barbaaddan qorannoo kana addaan kuttanii bahuuf mirga guutuu qabdu. Sababa kanaan faayidaa hadha mana/intalli kee argachuu qaban kan dhaban hin jiru.Gaafii hatii mana/intalli kee deebisuu hin barbaanne yoo jiraate deebisuuf dirqama hin qaban.

Walquunnamtii kamuu barbaachisuuf: Gaafii yoo qabaatan yookiin ibsa yoo barbaadan yeroo barbaadanitti lakkoofsa bilbilaa qorataa qorannoo kanaa:

Obbo Bakri Aliyi Rashid

Tessoo:Chinaksan,Itophia

Bilbila: 0912926690/0930079755

Email:sumayabakri90@gmail.com fi

Koree naamusa qorannaa dhaabbata kolleejii saayinsii fayyaa,Yuunivarsiitii Haromaaya lakk, bilbilaa **0254662011 ykn** lakkoofsa poostaa **235**, Harar,Itophia fayyadamuu dandeessu.

Ibsa fedhii hirmaataa qoranoo ta'uu ykn mirkaneessuu: Ibsa hirmaattota qorannoof kennamuu dubbiseera/ naa dubbifameera. Faayidaan qorannoo kanaa sirriitti naaf galee jira, akkaataa, rakkoo fi faayidaa akkasumas waa'ee iccitii eeguu, mirgaa hirmaataan qabu, akkasumas walquunnamtii(walitti dhufeenya) kamuu barbaachiseef teessoon natti himameera. Waan naa hin galle gaafachuuf carraan naa kennameera.wayita kam iyyuu qorannoo kana addaan kutte bahuu akkan danda'an, akkasumas gaaffiin debisuu hin barbaanne deebisuuf akkaan hin dirqamne. Kanaafuu qorannoo kanattihati mana/intalli koo fedhiin koon kan hirmaataan ta'uu mallattoo koon nan mirkaneessa.

Maqaa fi Mallattoo hirmaataa_____guyyaa_____

Maqaa raga sassaabaa _____Mallattoo _____Guyyaa _____

Annex 8.6: Gaaffilee wantoota murtesso turti yeroo jiddu dahumsa lama, giddu jiru kan,dubartoota herumanii ilman lama fi lama ol qaban,kan Aanaa chinaksan,Godina Harargee bahaa,naannoo Oromiyaa,Baha Etiyoophiyaa keessaa jiran ittiin funaanamu.

Kutaa.0ffaa: Ragaa Waligalaa kan haadhaa.

001: LakkoofsaEenyummaanama qorannoo keessatti hirmaatuu----------

002: Nannoo OROMIA

003: GodinaHararge Baha

004: Aanaa Chinaksan

005: Araddaa/Ganda----------

006: Haala deebii_____

1,Xumurame 2. Walakkaan isaa xumurameera 3. Ni dide 4. Kan biro-------

007: Guyyaa guutame----------

008:Sa'aa fi daqiiqaa itti eegalame----------

009: Sa'aa fi daqiiqaa itti xumurame----------

010: Supparvaayzara ilaalee, Maqaa----------Mallattoo----------

	Gaaffii	**Deebisaa**	**Kodi**
Kut I. Gaaffilee haala walii gala			
101	Umriin waggaan gutuun	_____waggan	
102	Iddon tessuma kessan kan amma .	1. Maagala 2. Badiyyaa	
103	Amanta keessan	1. Muslima 2. Ortodoxii 3. Catolik 4. Protestant 5. Kan bira	
104	Sablamiin keessaan	1. Oromom 2. Amara 3. Somale 4. Guragee 5. Kan bira	

105	Haala Barumsa haadhaa	1. Barnota idile hinbaratiin 2. Sadarkaa 1ffaa (1-8) 3. Sadarkaa 2ffaa(9-12) 4. Sadarkaa barnoota olaanaa .	
106	Sadarka Barumsa abbaa manaa	1. Barnota idile hinbaratiin 2. Sadarkaa 1ffaa (1-8) 3. Sadarkaa 2ffaa(9-12) 4. Sadarkaa barnoota olaanaa .	
107	Hojji idile hadha mana	1. Hojjattuu mootummaa 2. Qotee bulaa 3. Daldaltuu 4. Haadha manaa 5. Kan biroo(haa ibsamu) _____	
108	Hojji idile abba mana	1. Hojjattuu mootummaa 2. Qotee bulaa 3. Daldala 4. Hojji guyya guyya 5. Kan biroo(haa ibsamu) _____	
109	Urmii yeroo jalqaba heruumtuu.	_____waggaadhan	
Kuta.3ffa. Haala wal hormata fi ulfaan wal qabataan.			
301	Urmii dahumsa jalqaba waggaadhan	_____waggaan	
302	Baay'inaa hamma dasse	_____	
304	Urmii da'iima dura (ji'a guutuun)	_____ji'a gutuun	
305	Urmii da'iima mayyi (ji'a guutuun)	_____ji'a gutuu	
306	Ulfa dhuma kanaan dura karoora maatii hammayawa fayyadamtee jirtu?	1. Eyye 2. Mitii	
307	Yeroo hammamiif karoora matii fayyadamte	_____ji,an	
308	Yeroo da'ima kanaan duraa deessu tajajjila dahumsa dura hodofte?	1. Eyye 2. Mitii	
309	Iddo da'ima jalqaba itti dessaan	1.Kella fayya 2.kilinica 3.Bufata fayya 4.Hospitala 5.mana	
310	Sala da'ima kanaan dura	1. Dhira 2. Dubara	
311	Daima dhuma kanaan dura da'imnni dhalate lubbun jirachu	1. lubbun jira 2. du'e	
312	Yeroo hammamiif da'imnni harma qofa hodhe.	_____ji'a gutuun	
313	Da'ima boodaa oso hin ulfa'in yeroo hangamii harma hodhe	____ji'a gutuun	
314	Da'ima booda kana dahuuf karora qabdu turte?	1. Planned 2. unplanned	
315	Karoora matii fayyadamuuf enyuutuu murtessa?	1. Ofii kiyya 2. Lameen kenya	

		3. Husband only 4. Kan bira ibsi_	
317	Gara fulduraatti da'ima dhalu(dahu) ni barbaduu?	1. Eyye 2. Mitii	
319	Marii dame rayya misooma dubartota ,gandatti ykn araddatti hirmattani bettu	1. Eyye 2. Mitii	
320	Kitaaba fayya hadholii da'ima kana duraaf mana qabdu	1.Miti 2. Eye	
321	Dhimma fayya keetii irratti mirga murtesuu qabdu	1. Miti 2. Eye	
322	Dhimma diheessa mana keessni bituu irratti mirga ofii keessanii murtesuu qabdu	1. Miti 2. Eye	
323	Basii murtesso mana keessaniif bahu ofii keessnii basu dandesu?	1. Miti 2. Eye	
324	Dawwanna hiriya/fira/waltajji daquu/ilaluu ofii keessanii murtessu dandessu	1. Miti 2. Eye	
325	Miidha/jequmsa yeroo ulfa dura tokkole isiin irra gahe	1. Miti 2. Eye	
Kuta 4. Gaffilee qabenya abba warra ittin shalagaan			

	Gosa qabenya	Debii	
4.1	Beylada mana		
401	Loon(dibicha,sa;a,jabbi)	Miti(0) Eyye(1)	
402	Sa'a	Miti(0) Eyye(1)	
403	Jabbi	Miti(0) Eyye(1)	
404	Lukku	Miti(0) Eyye(1)	
405	Re'ee	Miti(0) Eyye(1)	
406	Hoola	Miti(0) Eyye(1)	
407	Farda	Miti(0) Eyye(1)	
408	Harre	Miti(0) Eyye(1)	
409	Gange	Miti(0) Eyye(1)	
	Meshalee mana		
410	Televisiona	Miti(0) Eyye(1)	
411	Sa'atii.	Miti(0) Eyye(1)	
412	Electricity	Miti(0) Eyye(1)	
413	Refrejaretara(Dilaleessa)	Miti(0) Eyye(1)	
414	Bilbila mobile hintahin	Miti(0) Eyye(1)	
415	Bilbila Mobile	Miti(0) Eyye(1)	
416	Konkolata	Miti(0) Eyye(1)	
417	Motorsaykila	Miti(0) Eyye(1)	
418	Saykila	Miti(0) Eyye(1)	
429	Garii	Miti(0) Eyye(1)	
420	Minjala	Miti(0) Eyye(1)	
421	Tesso/kursii	Miti(0) Eyye(1)	
422	Alga /siree	Miti(0) Eyye(1)	
423	Elee elaktrika	Miti(0) Eyye(1)	
424	Mama jirrenya ofi	Miti(0) Eyye(1)	
425	Lafa qonna ofii	Miti(0) Eyye(1)	
426	Mutta gas(Stove)	Miti(0) Eyye(1)	

	Qabenya omiisha mana		
427	Marasha	Miti(0) Eyye(1)	
428	Qotto	Miti(0) Eyye(1)	
429	Gagura ammayya	Miti(0) Eyye(1)	
430	Gagura aadaa	Miti(0) Eyye(1)	
431	Makotkocha(Hoe)	Miti(0) Eyye(1)	
432	Akaafa (Shovel)	Miti(0) Eyye(1)	
433	Hamtuu(Sickle)	Miti(0) Eyye(1)	
434	Madda bishanii	bomba miti(1)bomba(0)	
435	Haala mana keessa (lafa)	siminto/Muka (1) lafa (0)	
436	Dhabaa mana (girgida)	Simintto(1) dhoqqe(0)	
437	Gosa kornisa	Shara/huccu(1Qorqorro(0)	
438	Mana fincanii	mana fincanii kan aada (1) manafincanisadarkaeggate(0)	

Suparvizaraan mirkanaa'a: **Maqaa**---------- Mallattoo----------

Hirmaachuu keessaniif baay'ee isin galateeffanna!!!

Annex 8.7. Faahfaahinta ka qaybgalayaasha cilmi baadhista iyo Foomka heshiiska(Somali version)

Hordhac: Subax/galab wanaagsan, magacaygu waa _____.Qabalahan dhexdiisa cilmi badhista **MudaneBakri Caliyi Rashiid,** oo digriiga labaad (Masters) ee Jaamacada Haramaya, kuulida Saayniska Caafimaadka wax ka baranaya ayaan xog u ururinayaa. Cilmi baadhistan iyo sida ka qaybgalayaasha loo xulanayo ayaan idiin sheegi ee wakhti yar in aad isiisaan ayaan idinka codsanayaa.

Mawduuca cilmi baadhista: Waxyaabaha lagama maarmaanka ah ee xiliga labada dhalmo u dhaxeeya ee dumarka guursaday ee laba ilmo iyo wixii ka sareeya dhalay ee degmada Jinacsani, Gobolka bariga harargee, ee deegaanka oromiya ee bariga itoobiya.

Sababta cilmi baadhista: Sababta ugu wayn ee cilmi baadhistani looga baahanyahay Mudane Bakri Caliyi Rashiid cilmi baadhista digriiga labaad ee looga baahanyahay in uu buuxiyo ayay ka caawinaysaa.

Socdaalka iyo wakhtiga cilmi baadhista: Anigu su'aalahan la diyaariyay ayaan ku waydiin, haday u badato 30 daqiiqo oo kaliya ayay qaadanaysaa, sidaas darteed wakhtiga aad isiisay adiga oo xirriyad dareemaya waxa aad dareensantahay iiga jawaab.

Faa'iidada iyo khasaara cilmi baadhista: Sababta ka qaybgalka cilmi baadhistan wax dhib ah oo idin soo gaadhayo ma jiro marka laga reebo wakhtiga uu idinka qaato mooyee. Maadama ka qayb gasheen faa'iido si toos ah oo aad heleysaan ma jiro. laakiin warbixinta aad siiseeni sababaha taadhida in lagu dhalo keena in la kala saarto cilmi baadhis loo baahanyahay weeyi.

sidoo kale natiijada cilmi baadhistani qorshaystayaasha caafimaad ee heerka hoose jooga ayuu xog u noqonayaa iyo sidoo kale wakhtiga cilmi baadhista lagu jiro Hooyooyinka dhamaan wakhtiga lagu guda jiro kuwa xogta ururinaya talo ayay siinayaan.

Sirta oo la eego: xogta aad na siisaan si qarsoon ayaa loo eegayaa. wax si toos ah halkan inta qoraal ahaan la idiinku sheegayo ma jiro.faaiidada cilmi baadhistani waa mid dhamaan dadka deegaankan u faa'idaynaysa ee ma'ahaa mid ku kooban ka qaybgalayaasha oo kaliya. Jawaabtiina marka la diiwaan galanayo magaciina laguma darayo. Hadday af tahay iyo haday qoraal tahayba ka qaybgalayaasha si gooni ah cilmi baadhistan wax isku xidhaya ma jiro.

Xuquuqda: ka qaybgalku waa mid rabitaankiina ku xidhan. Cilmi baadhistan in aad ka qayb gasho ama aad ka hadho adiga ayaa go'aansan kara.sababtan awgeed faa'iido aad heshaan ama aad waayaysaani ma jiro. su'aal aadan rabin in aad ka jawaabto haday jirto qasab maaha in aad ka jawaabto.

Xidhiidhka markasta loo baahanyahay: Su'aal hadii aad qabto ama wax in lagu fahansiiyo aad rabto lamberka cilmi baadhistaha waa kan:-

MudaneBakri Caliyi Rashiid

Fadhigiisu: **Jinacsani,Tophia.**

Telefonka: 0912926690/0930075597

Email: sumayabakri90@gmail.com

Gudiga asluubta ee cilmi baadhista kuuliyada caafimaadka ee jaamacada haramaya, telefon numberka **0254662011** ama sanduuqa **boosta 235** ee harar waad isticmaali kartaa.

Rayiga rabitaanka ka qaybgalayaasha cilmi baadhista in aad xaqiijisid: rayiga kaqaybgalayaasha cilmi baadhista la siinayo waa loo akhriyay/ waa la ii akhriyay. faa'iidada cilmi baadhistani si fiican ayaan u fahmay, habka, dhibka iyo faa'iidada sidoo kale sida sirta eegista, xuquuqda uu kaqaybgalahu leeyahay iyo sidoo kalexidhiidhka loo baahanyahay in aad la samayso fadhigiisa waa la ii sheegay. wax aanan fahmin haduu jiro in aan waydiiyo fursad waa la isiiyay, wakhtiga aan rabo ka qaybgalka cilmi baadhista in aan joojiyo in aan joojin karo waa laiisheegay iyo su'aasha aanan rabin in aan ka jawaabo in ay khasab igu ahayn ni aan ka jawaabo.

Sidaas darteed cilmi baaadhistan rabitaankayga in aan kaga qayb galo magacayga iyo saxeexayga ayaan ku cadaynayaa.

Magaca iyo saxeexa ka qaybgalaha_____taariikhda _____

Magaca xog ururiyaha _____saxeexa _____taariikhda _____

Annex 8.8. Faahfaahinta ka qaybgalayaasha cilmi baadhista iyo Foomka heshiiska(Somali version) tan 18 sannod

Hordhac: Subax/galab wanaagsan, magacaygu waa _____.Qabalahan dhexdiisa cilmi badhista **MudaneBakri Caliyi Rashiid,** oo digriiga labaad (Masters) ee Jaamacada Haramaya, kuulida Saayniska Caafimaadka wax ka baranaya ayaan xog u ururinayaa. Cilmi baadhistan iyo sida ka qaybgalayaasha loo xulanayo ayaan idiin sheegi ee wakhti yar in aad isiisaan ayaan idinka codsanayaa.

Mawduuca cilmi baadhista: Waxyaabaha lagama maarmaanka ah ee xiliga labada dhalmo u dhaxeeya ee dumarka guursaday ee laba ilmo iyo wixii ka sareeya dhalay ee degmada Jinacsani, Gobolka bariga harargee, ee deegaanka oromiya ee bariga itoobiya.

Sababta cilmi baadhista: Sababta ugu wayn ee cilmi baadhistani looga baahanyahay Mudane Bakri Caliyi Rashiid cilmi baadhista digriiga labaad ee looga baahanyahay in uu buuxiyo ayay ka caawinaysaa.

Socdaalka iyo wakhtiga cilmi baadhista: Anigu su'aalahan la diyaariyay ayaan ku waydiin, haday u badato 40 daqiiqo oo kaliya ayay qaadanaysaa, sidaas darteed wakhtiga aad isiisay adiga oo xirriyad dareemaya waxa aad dareensantahay iiga jawaab.

Faa'iidada iyo khasaara cilmi baadhista: Sababta ka qaybgalka cilmi baadhistan wax dhib ah oo idin soo gaadhayo ma jiro marka laga reebo wakhtiga uu idinka qaato mooyee. Maadama ka qayb gasheen faa'iido si toos ah oo aad heleysaan ma jiro. laakiin warbixinta aad siiseeni sababaha taadhida in lagu dhalo keena in la kala saarto cilmi baadhis loo baahanyahay weeyi.

sidoo kale natiijada cilmi baadhistani qorshaystayaasha caafimaad ee heerka hoose jooga ayuu xog u noqonayaa iyo sidoo kale wakhtiga cilmi baadhista lagu jiro Hooyooyinka dhamaan wakhtiga lagu guda jiro kuwa xogta ururinaya talo ayay siinayaan.

Sirta oo la eego: xogta aad na siisaan si qarsoon ayaa loo eegayaa. wax si toos ah halkan inta qoraal ahaan la idiinku sheegayo ma jiro.faaiidada cilmi baadhistani waa mid dhamaan dadka deegaankan u faa'idaynaysa ee ma'ahaa mid ku kooban ka qaybgalayaasha oo kaliya. Jawaabtiina marka la diiwaan galanayo magaciina laguma darayo. Hadday af tahay iyo haday qoraal tahayba ka qaybgalayaasha si gooni ah cilmi baadhistan wax isku xidhaya ma jiro.

Xuquuqda: ka qaybgalku waa mid rabitaankiina ku xidhan. Cilmi baadhistan in aad ka qayb gasho ama aad ka hadho adiga ayaa go'aansan kara.sababtan awgeed faa'iido aad heshaan ama aad waayaysaani ma jiro. su'aal aadan rabin in aad ka jawaabto haday jirto qasab maaha in aad ka jawaabto.

Xidhiidhka markasta loo baahanyahay: Su'aal hadii aad qabto ama wax in lagu fahansiiyo aad rabto lamberka cilmi baadhistaha waa kan:-

MudaneBakri Caliyi Rashiid

Fadhigiisu: **Jinacsani,Tophia.**

Telefonka: 0912926690/0930079755

Email:sumayabakr**i**90@gmail.com

Gudiga asluubta ee cilmi baadhista kuuliyada caafimaadka ee jaamacada haramaya, telefon numberka **0254662011** ama sanduuqa **boosta 235** ee harar waad isticmaali kartaa.

Rayiga rabitaanka ka qaybgalayaasha cilmi baadhista in aad xaqiijisid: rayiga kaqaybgalayaasha cilmi baadhista la siinayo waa loo akhriyay/ waa la ii akhriyay. faa'iidada cilmi baadhistani si fiican ayaan u fahmay, habka, dhibka iyo faa'iidada sidoo kale sida sirta eegista, xuquuqda uu kaqaybgalahu leeyahay iyo sidoo kalexidhiidhka loo baahanyahay in aad la samayso fadhigiisa waa la ii sheegay. wax aanan fahmin haduu jiro in aan waydiiyo fursad waa la isiiyay, wakhtiga aan rabo ka qaybgalka cilmi baadhista in aan joojiyo in aan joojin karo waa laiisheegay iyo su'aasha aanan rabin in aan ka jawaabo in ay khasab igu ahayn ni aan ka jawaabo.

Sidaas darteed cilmi baaadhistan rabitaankayga in aan kaga qayb galo magacayga iyo saxeexayga ayaan ku cadaynayaa.

Magaca iyo saxeexa ka qaybgalaha_____taariikhda _____

Magaca xog ururiyaha _____saxeexa _____taariikhda _____

Annex 8.9: Survey instrument in Somali on determinants of inter-birth interval among married multiparous mother in Chinaksen district, East Hararge Zone, Oromia, Eastern Ethiopia.

Qoo,iska 0: su,aalooyinka Aqoonsiga Dataaga

001 su,aalooyinka nambarka aqoonisa _____

002 kililka: Oromia

003 gobalka: bari Hararghe

004 dagmada : chinaksen

005: Xaafada ammaa qabaleega : --------,------

006 dhibicda koodka _____

Waad buuxisey =1, maaqeeptaat buuxiyeey =2, muudiidey =3, kakale =4

007: maalika lagu su,aaley : _____/____/_____

Maalika bisha sanadka

008: saacadaa su,aalka lagu bilaabey :_____:_____

sacada daqiiqo

009: xiliga lagu dhameeyey: _____:_____

sacada daqiiqo

010: check garee magaca kormarka - ----------

saxiix----------

malinka ----------

Nam	Su,aal	Jawaab	Code	Irra darbi
I. Macluumaadka la xiriira dadka				
101	Imasa jirbaa tahay.	_____ sanno		
102	Maad guursatay	1. Waan guursadey 2. Maguursanin 3. Waan furay 4. Odeeybaa kadhintey		
103	Imika meshat aad kunno shay	3. Maagalada 4. Miiyiga		
104	Diintaata?	1. Muslim 2. Catholic 3. Protestant 4. Orthodox 5. Tacaadatakakale_____		
105	Qomiyadada tahay ?	1. Oromoo 2. Amhra 3. Gurage 4. Somale 5. Tacaadata kakale		
106	Darajada waxbarashadaad ?	1. Dugsiga hose 2. Dugsiga labaat 3. Dugsiga sadaxaaat 4. Mitnaba ma,ihin		
107	Darajada waxbarashada waalidkaakag	1. Dugsiga hose 2. Dugsiga labaat 3. Dugsigasadaxaaat 4. Mitnaba ma,ihin		
108	Maxay tahayi shaqadaada ?	1. Shaqa dawladeed 2. Beera qotato 3. Trader 4. Xaaska reerka joogtey		
109	Reerkoogu maxay kashaqeeyaan ?	1. Shaqalaha Dawladeed 2. Beeraqotato 3. Ganacsato 4. Reer Joogte		
110	misa jir baad kuguursatey .?	_____sannoo		
111	Uguyaraan Adoo imisa jirbaad dhashey	_____ sannoo		
3. Haala wal hormata ,fi ulfaan wal qabataan.				
301	Urmiga (da'ada)dhalmada uhoreysa lagudhalo	_____sanno		
302	Inta 'aydhashay	_____		
303	Inta caarrur aadleedahay	_____		
304	Cimriga(da'ada) ilmahaagandanbee kahooreye	_____bilood		
305	Cimriga(da'ada) ilmahaaga udanbeeyya	_____ bilood		
306	Keed isticmaali jirtay	1. Kininka 2. Ka Irbadda 3. Ka Garabka		

		4. KuKalay Hadduu Jiro __		
307	Wakhtiga aad kalafagenta isticmashay	_____bilood		
308	ilmahan imika(hada) aad dhashay kahoor kalafagenta carruurta makudhaqmaysay	1. Haa 2. Maya		
309	Ilmihaagii horee mesha aad kudhashay	1. Dhakhtarka 2. Guriga/meel kale		
310	Dhalmada ilmaha hore	1. Wiil 2. Gabadh		
311	Ilmihaagii horee munolyahay	1. Munolyahay 2. Mudhintay		
312	Ilmahaga hore naska intee inleeg iyyu chaqay	_____ bilood		
313	Ilmahaga labaad adigoon uurka kuqaadiin intee baad kala rajisay	_____Bilood		
314	Ilmahan kahoor uurku mukaabaxay	1. Haa 2. Maya		
315	Labada ilmood dhaxdooda mukashafeecay	1. Haa 2. Maya		
316	Ilmaahan danbe inaad dhasho qorshaha muukugu jiray	1. haa 2. Maya		
317	Kalakorinta carrurta isticmalka gu'anku waa'ayyo	1. Hoyyada 2. Labadeennuba 3. Odayga kaliya		
318	Intad noshahay immisa inaad dhashid iyaad rabta(donaysa)	_____		
319	Dhibattoyinka dhalmadu may kusoomartay	1. Haa 2. Maya		
320	Dhibattoyinka cudurada sidokale dhikkar,macaan, may kusoomartay(mukuhelay)	1. Haa 2. Maya		
321	Wadatashiga waaxda hormarka dumarka ee qabalaha horay ma uga qaybgashay	1. Haa 2. Maya		
322	Buuga xeerka caafimaadka qoyska hada kahor guraga ma kuhaysatay	1. Haa 2. Maya		
323	Caafimaadka nafta in aad u go'aansan karto xor ma u tahay	1. Haa 2. Maya		
324	Arimaha baahida guriga ee wax soo iibinta in aad soo iibin karto ma go'aamin kartaa	1. Haa 2. Maya		
325	Kharashyada muhiimka ah ee gurigiinago'aankaaga ma ku bixin karta	1. Haa 2. Maya		
4. Gaffilee qabenya haske waaqorenayo				
4.0	Gosa qabenya abba warra	Debii		
4.1	Beylada mana			

401	xoolaha (dibi , saca , weesha)	Maya(0) Haa(1)		
402	ido	Maya(0) Haa(1)		
403	Adhiga	Maya(0) Haa(1)		
404	Lukida	Maya(0) Haa(1)		
405	Re'ee	Maya(0) Haa(1)		
406	Hoola	Maya(0) Haa(1)		
407	Faraska	Maya(0) Haa(1)		
408	Dameeraha	Maya(0) Haa(1)		
409	Gange	Maya(0) Haa(1)		
	Meshalee mana			
410	Television	Maya(0) Haa(1)		
411	idaacada	Maya(0) Haa(1)		
412	Daawo /sacad	Maya(0) Haa(1)		
413	Electricity	Maya(0) Haa(1)		
414	Refrigerator	Maya(0) Haa(1)		
415	Mobile phone	Maya(0) Haa(1)		
416	Gaadhiga	Maya(0) Haa(1)		
417	Dhugdhugle	Maya(0) Haa(1)		
418	Baaskil	Maya(0) Haa(1)		
429	Gaadi xiimaar /gaadhi faras	Maya(0) Haa(1)		
420	Miiska	Maya(0) Haa(1)		
421	Kursiga	Maya(0) Haa(1)		
422	Saariir	Maya(0) Haa(1)		
423	Leedhka "mitaad"	Maya(0) Haa(1)		
424	Guriga gujirtiin makiinna	Maya(0) Haa(1)		
425	dhulkani makkiinna	Maya(0) Haa(1)		
426	Gaagura shinida	Maya(0) Haa(1)		
	Qabenya omiisha mana			
427	Marasha	Maya(0) Haa(1)		
428	Qotto	Maya(0) Haa(1)		
429	Gagura ammayya	Maya(0) Haa(1)		
430	Gagura aadaa	Maya(0) Haa(1)		
431	faraleeyda (Hoe)	Maya(0) Haa(1)		
432	xagafka (Shovel)	Maya(0) Haa(1)		
433	Hamtii (Sickle)	Maya(0) Haa(1)		
434	Biyo sideebaad leedihin	qasabad (1) maha qasabad(0)		
435	Haala mana keessa (lafa)	siminto/Muka (1) lafa (0)		
436	Nuuca gidaarka	sibidh(0) Mud(1)		
437	Bilaafoon	Concrete(1) chiingat(0)		
438	Suuliga	suliganuucaugudanbeeydye (1)Pit latrine(0)		

Annex 8. 10: Curriculum Vitae

1. Personal Profile

Name Bekry Aleye Reshid

Sex Male

Place of birth Chelenko, metta woreda, Eastern Hararge, Oromia, Ehiopia.

Date of Birth sep,1/1986 G.C

Nationality Ethiopian

Marital status Married

Mobile 0912926690/0930075597

Email sumayabakri90@gmail.com

2. Academic Back Ground

University Haramaya University since october,2019, Mph in Epidemiology

University Jimma University,2010, BSc in Public Health Officer

Preparatory Haramaya Preparatory school , 2004-2005 GC.

High school Chelenko high school,2001-2003,GC.

Elementary Cheleko elemantary school, 1993-2000 GC

Summary of Qualification and Work Experience

I am a registered public health officer and licensed in junior health professional with **10 y**ears in different governmental health institution (Health centers and District Health office) with work experience in different Managerial and Expert Positions at different Levels as listed below:-

3. Work and Professional Experience (from recent to past)

Communicable and non communicable disease coordinator, October 01/2018 to now.

Woreda Health Office head at Chinaksen woreda Health Office, 01/2018 till 30,1,2018

Family Health coordinator , 10 /2015 till may 01/2018

HIV/AIDS Focal Person January 2014 to January 10 /2015 GC

Health Center Head At Chinaksen Health Center,Sep 2012 to January 2014 GC

Health Center at OPD , Sep 2011- Sep 2012 GC

4. Training (short course)

Both adult and pediatric ART(AIDS), June 1-30,2012.

Master Trainers' Training (MTOT) on comprehensive MNCH/PMTCT. 2016

Supervisory skills Training ,june,22-26,2015

TOT Training on IMNCI

Training on Leadership, Management and Governance (LMG)

HMIS

TOT on Meningitis ,october12-20,2015

Training on Antiretroviral therapy and management on opportunistic infection

5. Skills and Hobbies

Language skill

Afan Oromo:- listen, speak, write and read …….Excellent communication skill

Amharic; - listen, speak, write and read ……Very Good communication skill

English :- listen, speak, write and read ---------- Good communication skill

Computer skill

Excellent in Microsoft word, Excel, Power Point, SPSS, Stata, EPI DATA, and EPINFO.

Hobbies wondering

Scientific literature reading

Reading Fiction and watching TV

Active Participant in any discussion and civic associations

Reference

Ato Mahmadin Hussen : East Hararge Zonal Health Office head.

Cell phone 0967060336

Dr.Bezatu Mengistie(PhD) Associated professor of public Health,Education development center coordinator ,editor- in-Chief East African journal of Health and Biomedical sciences,Haramaya University,college of Health and Medical Science.
Cell phone +251911068832,
Email:bezatum@gamil.com.

I confirm that all the above data are true and can be supported by documents on demand.

Bekry Aleye _____